

**REMARKS**

The Examiner is thanked for the thorough review and consideration of the present application. The non-final Office Action dated July 23, 2003 has been received and its contents carefully reviewed.

By this Response, claims 1, 4, 10, 13, 19, 22, 24, 26 and 27 have been amended. Claims 1-27 are pending. No new matter has been added. Reconsideration and withdrawal of the rejections are requested in view of the above amendments and following remarks.

In the Office Action, claims 1, 2 and 6-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,760,854, issued to Ono et al. ("Ono") in view of U.S. Patent No. 6,146,796, issued to Kaneko et al. ("Kaneko"), and further in view of U.S. Patent No. 5,530,568, issued to Yamamoto et al. ("Yamamoto"). Applicants respectfully traverse the rejections because Ono, Kaneko and Yamamoto, analyzed alone or in any combination, fail to teach or suggest the combined features recited in the claims of the present application. For example, Ono, Kaneko and Yamamoto each fail to teach or suggest an in-plane switching liquid crystal display device having, among other features, "a first conductive line formed directly on the first substrate" and "a common line on the first conductive line", as recited in independent claims 1 and 10 of the present application. The cited combination further fails to teach or suggest "a first pixel electrode connecting line on the first substrate" as recited in claim 1, and "an auxiliary pattern extended from the first conductive line", as recited in claim 10.

The Examiner concedes on page 2 of the Office Action that Ono fails "to disclose the required common line and the required conducting line structures". To compensate for the deficiencies of Ono, the Examiner relies upon the teachings of Kaneko and Yamamoto. Based upon the teachings of Kaneko and Yamamoto, the Examiner states that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the common line and the conducting line structures in Ono as taught by Kaneko and Yamamoto respectively in order to have a liquid crystal display with better electrical conductivity characteristics." Applicants disagree.

Kaneko discloses a liquid crystal display device in which electrolytic corrosion is prevented from "occurring at the intersections of the gate lines and the drain lines or in a lead terminal portion over an active matrix substrate" (col. 3, lines 32-36). The liquid crystal display device in Kaneko includes "a common line formed on one of said pair of substrate" and is depicted as element 21 in FIG. 8. (col. 4, lines 2-3). However, Applicants respectfully submit there is no teaching within Kaneko of the "common line on the first conductive line" as recited in claims 1 and 10.

Yamamoto discloses a "liquid crystal display panel which is equipped with testing pads for electrically testing whether or not a conductive layer has been formed without any disconnection in the manufacture process" (col. 1, lines 7-12). The liquid crystal display device of Yamamoto includes "a set of conductive lines disposed on the surface of at least one of the transparent plates, each of the lines having a lower layer of aluminum or aluminum alloy and an upper layer of a transparent conductive film. The conductive lines are commonly connected at one end to a testing pad." (col. 2, lines 12-16). However, Applicants respectfully submit Yamamoto fails to teach or suggest "a first conductive line formed directly on the first substrate" as recited in claims 1 and 10 of the present application.

Applicants further submit that even if Ono were modified by the teachings of Kaneko and Yamamoto as suggested in the Office Action, which Applicants do not concede there is proper motivation to do, the resulting device would fail to have the structure and combined features recited in the claims of the present application. In particular, the resulting device would fail to provide "a first conductive line formed directly on the substrate" and "a common line on the first conductive line", as recited in claims 1 and 10, "a first pixel electrode connecting line on the first substrate" as recited in claim 1, and "an auxiliary pattern extended from the first conductive line" as recited in claim 10. As such, independent claim 1 and its rejected dependent claims 2 and 6-9, and independent claim 10 and its dependent claims 11-18 are patentable over any combination of Ono, Kaneko and Yamamoto. Reconsideration and withdrawal of the rejection are requested.

In the Office Action, claims 3-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ono, Kaneko, Yamamoto, and further in view of U.S. Patent No. 6,239,854,

issued to Hirakata et al. ("Hirakata"). Claims 3-5 depend from independent claim 1 discussed above. Applicants traverse the rejection because neither Ono, Kaneko, Yamamoto, nor Hirakata, analyzed alone or in combination, teach or suggest the combined features recited in the claims of the present application. In particular, Ono, Kaneko, Yamamoto and Hirakata, fail to teach or suggest an in-plane switching liquid crystal display device having, among other patentable features, "a first conductive line formed directly on the first substrate", "a common line on the first conductive line" and "a first pixel electrode connecting line on the first substrate" as recited in independent claim 1.

Applicants have discussed above the deficient teachings of Ono, Kaneko and Yamamoto. Hirakata fails to remedy the deficient teachings of these three references. Hirakata merely discloses an active matrix display matrix in which "lines are provided under the region where the sealant is provided (hereafter referred to as "sealant region"). For example, such lines include external connection lines for transmitting signals between the outside and inside of the sealant and short rings formed by extending scanning lines and signal lines and shorting them outside the sealant region in order to prevent electrostatic breakdown of TFTs (thin film transistors) forming an active matrix display circuit during manufacturing. The lines provided under the sealant region results in different heights in the sealant" (col. 1, lines 25-36).

Based upon the teachings of Hirakata, the Examiner states that it would have been obvious to one of ordinary skill in the art to include the common line, the conducting line structure, and the auxiliary pattern structures in Ono as taught by Kaneko, Yamamoto and Hirakata in order to have a liquid crystal display with better electrical conductivity characteristics. Applicants disagree, first, because Kaneko and Yamamoto fail to remedy the deficient teachings of Ono with regard to the "first conductive line formed directly on the first substrate", "a common line on the first conductive line", and "a first pixel electrode connecting line on the first substrate", as discussed above. Secondly, the problem that Hirakata is solving relates to height differences in the sealant region, whereas, in the present invention, the auxiliary pattern prevents "residue from connecting the data line 171 to the first pixel electrode connecting line 174 and thus prevent a short circuit" (specification, page 12, lines 17-19). As such, one of ordinary skill in the art would not be motivated by the teachings of Hirakata to modify Ono to

obtain a device having the combined features of claim 1 that prevents a short circuit between the data line and the first pixel electrode connecting line as disclosed in the present application.

Accordingly, independent claim 1 and its rejected dependent claims 3-5 are patentable over any combination of Ono, Kaneko, Yamamota and Hirakata. Reconsideration and withdrawal of the rejection are requested.

In the Office Action, claims 19-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ono, in view of U.S. Patent No. 6,146,796, issued to Kim, and further in view of U.S. Patent No. 4,630,355, issued to Johnson. Applicants traverse the rejection because neither Ono, Kim nor Johnson, analyzed alone or in any combination, teach or suggest the combined features recited in the claims of the present application. In particular, Ono, Kim and Johnson fail to teach or suggest a method for fabricating an in-plane switching liquid crystal display device that includes, among other features, "forming a first conductive line directly on the first substrate", "forming a common line on the first conductive line", and "forming a first pixel electrode connecting line on the first substrate", as recited in independent claim 19.

The Office Action concedes that Ono fails to disclose the "required method of making common line and the required method of making conducting line structures". To compensate for the deficient teachings of Ono, the Office Action relies upon the teachings of Kim and Johnson. Based upon the teachings of Kim and Johnson, the Office Action states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include "the required method of making common line and the required method of making conducting line structures in Ono... in order to make a liquid crystal display with better electrical conductivity characteristics."

Kim discloses a liquid crystal display and a manufacturing method in which error of an active area can be precisely measured even with the occurrence of a shifting, a rotation, a distortion and other such flaws (col. 2, lines 29-33). In the in-plane switching mode example of Kim depicted in FIG. 9, "the common line 530 is disposed parallel to the horizontal gate lines 510", and "the gate line 510, common electrode 540, pixel electrode 550, common line 530 and stitch pattern 560 are all formed on a first layer of the pixel structure" (col. 7, lines 5-22). And, Johnson discloses a circuit assembly which "includes a supporting substrate and a plurality of

conductive lines supported on the substrate and adapted to interconnect circuit elements supported or to be supported on the substrate” (col. 3, lines 11-15). Further, in Johnson, conductive lines 14 and 16 are deposited directly upon the substrate 11..., and “a layer 12 of phase change material is deposited on top of them” (col. 7, lines 25-34). However, Applicants respectfully submit that the combined teachings of Kim and Johnson fail to teach or suggest “forming a first conductive line directly on the first substrate” and “forming a common line on the first conductive line” as recited in claim 19. Additionally, the cited combination of Ono, Kim and Johnson fail to teach or suggest “forming a first pixel electrode connecting line on the first substrate”, as recited in claim 19.

Since Ono, Kim and Johnson fail to teach or suggest the combined features recited in claim 19, independent claim 19 and its dependent claims 20-27 are patentable over Ono, Kim and Johnson. Reconsideration and withdrawal of the rejection are requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. If the Examiner deems that a telephone conversation would further the prosecution of this application, the Examiner is invited to call the undersigned at (202) 496-7500.

Application No.: 10/020,894  
Amendment dated October 1, 2003  
Reply to Office Action of July 23, 2003

Docket No.: 8733.556.00-US

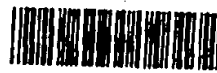
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Dated: October 1, 2003

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PATENT TRADEMARK OFFICE

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